UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,968	10/01/2001	Hoi-Sing Kwok	016660-102	4935

21839 7590 06/18/2003

BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER
BROCK II, PAUL E

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/966,968	KWOK ET AL.	
	Examiner	Art Unit	
	Paul E Brock II	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) *2-13,17-19 and 21-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,14,15 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 October 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Species A, claims 1, 14, 15, and 20 in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 2 – 13, 16 – 19, and 21 – 39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Elections were made **without** traverse in Paper Nos. 6 and 8.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, top and bottom alignment layers, and input and output polarizers must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: No antecedent basis for the claim terminology of "rubbing directions of the top and bottom alignment layers that favor a twist angle".

Claim Objections

5. Claims 1, 14, 15 and 20 are objected to because of the following informalities: In the second line of claim 1, "liquid crystal cell" should be --a liquid crystal cell--, "the top and bottom alignment layers" should be --top and bottom alignment layers--, . Appropriate correction is required. All other objectionable language problems should be fixed at this time.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 14, 15, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. It is not clear if "rubbing directions of the top and bottom alignment layers that favor a twist angle" is defining a rubbing direction of the top and bottom alignment layer (i.e. the rubbing direction of the bottom alignment direction is 22 degrees), or defining a difference between the rubbing directions of the top and bottom alignment layers, or something completely different. What physical parameter is "rubbing directions of the top and bottom alignment layers that favor a twist angle" actually defining?

9. Claim 1 recites the limitation "the liquid crystal" in sixth line of the claim. There is insufficient antecedent basis for this limitation in the claim. For purposes of this office action "the liquid crystal" will be considered --a liquid crystal layer of the liquid crystal cell--. Likewise, "the cell" in the seventh line of the claim should be --the liquid crystal layer--, and "the thickness" in the sixth line should be --a thickness--.

10. Claim 20 recites "the comb shaped structure and the top conductive electrode are patterned to form a structure with horizontal and vertical lines." It is not clear how this limitation modifies "a top conductive electrode patterned into a comb shaped structure," as defined in claim 14. Is the top conductive electrode patterned twice? Is there only one patterning step? Does the vertical and horizontal lines somehow define the comb shaped structure?

11. There are other indefinite problems in the claims. All lack of antecedent basis problems should be fixed. The claims should be written such that all of these problems are overcome. An

example of another one of the problems in claim 1 is that it is not clear to what "an angle" defined by either of the polarizers is being compared. What is the reference point from which to measure the angles?

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leenhouts (USPAT 4896947) in view of Junge et al. (USPAT 5702640, Junge) and Yamamoto et al. (USPAT 4995704, Yamamoto).

Leenhouts discloses in the abstract and figure 1 a liquid crystal display. Leenhouts discloses in the abstract and figure 1 a liquid crystal cell with rubbing directions of top and bottom alignment layers that favor a twist angle of 22°. Leenhouts discloses in the abstract and figure 1 a thickness of a liquid crystal layer times a birefringence (Δnd) of the liquid crystal layer is 0.27 μm. Leenhouts discloses in column 3, lines 39 – 52 an input polarizer with an angle of 45±5°. It is not clear if Leenhouts teaches an output polarizer with an angle of ±68±5°. Yamamoto teaches in figure 1a, and column 10, lines 5 – 9 an input polarizer (3) with an angle of 47° and an output polarizer (4) with an angle of 64°. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the input and output

polarizations of Yamamoto in the device of Leenhouts in order to obtain a liquid crystal display with a large viewing angle as stated by Yamamoto in column 10, lines 10 – 14. Leenhouts discloses in column 3, lines 23 – 24 a chiral dopant added to the liquid crystal. It is not clear if Leenhouts teaches that a ratio of the thickness of the cell and a pitch of the liquid crystal twist is between 0.19±0.1. Junge teaches in column 2, lines 65 – 67, and column 3, lines 1 – 3 a chiral dopant added to the liquid crystal such that a ratio of the thickness of the cell and a pitch of the liquid crystal twist is 0.20. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the ratio of Junge in the device of Leenhouts and Yamamoto in order to have extremely short switching times as taught by Junge in column 1, lines 7 – 12.

14. Claims 14, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leenhouts, Yamamoto, and Junge as applied to claim 1 above, and further in view of Sugimura (USPAT 5767936).

Leenhouts discloses in figure 1 and the abstract, a conductive electrode (6, adjacent to 2) on one side of the liquid crystal cell. Leenhouts discloses in figure 1 and the abstract a conductive electrode structure on the other side of the liquid crystal cell consisting of a conductive ground plane. It is not clear if Leenhouts, Yamamoto, and Junge teach that the conductive electrodes are transparent. Sugimura teaches in figure 11, and column 8, lines 64 – 67, and column 9, lines 10 – 24 transparent conductive electrodes (4) on one side of a liquid crystal cell, and a transparent conductive electrode structure on the other side of the liquid crystal cell consisting of a conductive ground plane (12), an insulation layer (13) on top of such ground plane, and a top conductive electrode (5) patterned into a comb shaped structure. It would have

been obvious to one of ordinary skill in the art at the time of the present invention to use the transparent electrodes of Sugimura in the method of Leenhouts, Yamamoto, and Junge in order to maintain a display apparatus capable of maintaining excellent contrast as stated by Sugimura in column 2, lines 27 – 30.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takizawa et al., Hirschmann et al., Lu et al., and Hansu et al. all disclose liquid crystal display devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II
June 16, 2003

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800